multiple wavelengths are routed to each consecutive node, and only local customer packets are multiplexed out of the wavelength packet stream and distributed to the local customers. Depicted here are four nodes with four wavelengths distributed to the first node. At each node, packets rather than an entire wavelength are dropped and distributed. This means the wavelengths are available for further distributed to a next sequential node. The wavelength contained packets are packets are dropped at their node addresses until all packets have been dropped. In reverse, packets would be added at each node.

[65] Fig. 6d depicts wavelength non-specific branch distribution into the mesh architecture of the present invention with multi-path capability and redundancy of Fig. 6c. Fig 6d is Fig 6c reconfigured into a mesh architecture whereby each node has multiple access (up-stream/down-stream and cross-connect capabilities) and whereby a particular customer packet can be routed to its destination via a number of alternate paths thereby increasing local network redundancy and service availability. Note also the use of a radio control layer superimposed over the optical transport layer to provide routing, control and status conditions. Here the secondary aggregation node 530 receives communications from primary distribution/aggregation node 510 and primary fiber metropolitan ring 505. Filled in circles represent a plurality of tertiary aggregation nodes 535. Multiple wavelengths are forwarded from the secondary aggregation node 530 to a plurality of tertiray aggregation nodes immediately adjacent to secondary aggregation node 530. Tertiary aggregation nodes 545 are each connected to an adjacent teriary aggregation node to form a mesh. Packets or entire wavelngths are dropped to a customer's premises depending upon the service contracted. The wavelength reaching the customer is one locally generated by the last node router next to the customer's premises, not a distant central office (CO) as in the case of a star pattern configuration shown in Fig. 6a. To have such wavelength flexibility and wavelength packet conversion, the mesh proposal requires local control of wavelength packet demultiplexing at each node location. This local capability further requires packet and header detection, high speed optical packet-switching based on look-up tables, high-speed optical routing, wavelength selection and

wavelength remultiplexing at each node site. The outgoing re-combined wavelength packet channels then can be optically amplified (regenerated) and sent via fiber to the transmit (FSOC) telescope and onto the next node router. The radio control layer is exhibited in Fig. 6d, the down-stream node control data is broadcast from the secondary aggregation node 530 to the tertiary aggregation nodes. Individual nodes are able to reply back to the secondary node controller and inter-node control is also possible for local cuctomer-to-customer routing.

[66] It should be clear from the foregoing that the objectives of the invention have been met. While particular embodiments of the present invention have been described and illustrated, it should be noted that the invention is not limited thereto since modifications may be made by persons skilled in the art. The present application contemplates any and all modifications within the spirit and scope of the underlying invention disclosed and claimed herein.